DISCUSSION OF THE CLAIMS

Claims 1-28 and 30-35 are active in the present application. Claims 32-35 are new claims. Support for the new claims is found in Tables 1 and 2 and in the examples of the specification. Independent Claim 1 is amended herein to recite a first layer of a first porous ceramic material and a second layer of a fine particle. Support for the amendment is found, for example, in Inventive Example 3 on pages 33-34. The claims are further amended for matters of form and clarity. Claim 29 is a canceled claim. Claims 20-28 and 30-31 are presently withdrawn from active prosecution.

No new matter is believed to have been added by this amendment.

REMARKS

Present independent Claim 1 is drawn to a separator that includes (i) a flexible perforated support, (ii) a first layer of a first porous ceramic material, and (iii) a second layer comprising fine particles of a further material. The first layer of the first porous ceramic material is coated directly on the flexible perforated sheet. The second layer comprising the fine particles of the further material covers the first layer.

Applicants demonstrated that the separator of the present claims provides significantly improved performance when used in a battery. Applicants draw the Office's attention to Reference example 1 on pages 31-32; Inventive example 3 on pages 33-34; and Test examples 1 and 2 on pages 34-36 of the present specification. Reference example 1 and Inventive example 3 each comprise a PET nonwoven (e.g., a flexible perforated support) that is coated with a first layer of a first porous ceramic material. In fact, Inventive example 3 is made from the separator of Reference example 1.

Inventive example 3 differs from Reference example 1 by the inclusion of a second layer comprising fine particles that covers the first layer of first porous ceramic material. As described in the examples of the present specification, Inventive example 3 is encompassed by present Claim 1. Reference example 1 is not encompassed by Claim 1 because Reference example 1 does not have the second layer recited in Claim 1.

Test example 1 on page 32 of the specification describes a lithium battery made from the separator of Reference example 1. The performance of the battery in Test example 1 is described as follows:

> The charging behavior of this battery was tested. After more than 250 cycles, the battery exhibits a clear drop in capacity of up to 25%.
>
> The capacity of this battery decreased even more distinctly after 200 cycles when the cell is stored at elevated temperature

> (50-60°C) in the fully charged, partially charged or discharged state between the cycles.

In contrast, Test example 2 on page 34 which describes a battery made from the separator of Inventive example 3 has performance properties described as follows:

> The charging behavior of this battery was tested. After more than 500 cycles, the battery exhibited only a very minimal drop in capacity of a few percentage points. Even increasing the charging voltage from 4.1 to 4.2 in the 450th charging cycle did not harm the battery.
>
> The capacity of the cells decreases only very moderately even on storage of this battery at elevated temperature (50-60°C) in the fully charged, partially charged or discharged state between the cycles. Batteries which are equipped with such a separator are thus very useful even in applications where heating to above 50°C cannot be ruled out.

Applicants have thus shown in the original specification that the inclusion of a second layer comprising fine particles coating a first layer of a first porous ceramic material of a separator provides a battery having substantially improved capacity and charging properties.

The Office's Rejections

The Office rejected the claims as anticipated and/or obvious over Penth (US 2002/0023874) and Hennige (DE 10115928), each alone or in combination with other art. Applicants submit that the art relied on by the Office in the April 15, 2009 Office Action fails to disclose or suggest the presently claimed invention. In particular, Applicants submit that the art of record does not disclose or suggest that the inclusion of a second layer of fine particles covering a first layer of a first porous ceramic material may provide a separator having substantially improved performance when used in a battery.

Applicants submit that the rejection of claims as anticipated by either of Penth or Hennige is not supportable at least because the cited art fails to disclose all of the limitations of previously pending Claim 1. For example, previously pending Claim 1 recited fine particles

having an average particle size of 0.5-30% **of the average pore size of the ceramic material**. The Office failed to show how either of Hennige or Penth discloses and/or suggests this feature of the presently claimed invention.

Applicants thus submit that the rejection of the previously presented claims on the grounds set forth by the Office is legally not supportable.

The present amendment to Claim 1 is made without prejudice and without disclaimer of subject matter.

Applicants draw the Office's attention to new dependent Claims 32-35. The new dependent claims recite a first layer of a first porous ceramic material that comprises an adhesion promoter. In particular, new Claim 35 recites particular adhesion promoters explicitly named in the present specification. Applicants submit that the subject matter of new dependent Claim 35 is further patentable over the cited art in view of the cited art's silence with respect to the use of a layer of porous ceramic material comprising the adhesion promoters recited in the present claims.

For the reasons discussed above in detail, Applicants request withdrawal of the rejection and the allowance of all now-pending, active claims.

Respectfully submitted,

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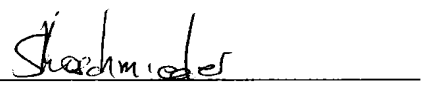

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